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MIMULUS FILICIFOLIUS JOINS *ERYTHRANTHE* (PHRYMACEAE)

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ABSTRACT

Mimulus filicifolius Sexton et al. (2013) is transferred to *Erythranthe* as **Erythranthe filicifolia** (Sexton et al.) Nesom, **comb. nov.** Its closest relatives are hypothesized here to be *E. nudata* and *E. percaulis*, also endemics of north-central California, members of *Erythranthe* sect. *Simiola*.

KEY WORDS: *Erythranthe* sect. *Simiola*, new combination, *Mimulus*, Phrymaceae

A new monkeyflower from Butte and Plumas counties, California (Sexton et al. 2013), has axile placentation and pedicellate flowers, which place it within the genus *Erythranthe* (Barker et al. 2012), and its calyx with elongate upper lobe and upcurving lower lobes places it among the species of *Erythranthe* sect. *Simiola* (Nesom 2012).

Erythranthe filicifolia (Sexton, Ferris, & Schoenig) Nesom, **comb. nov.** *Mimulus filicifolius* Sexton, Ferris, & Schoenig, Madroño 60: 237. 2013.

As noted by Nesom (2013), it seems likely that *Erythranthe filicifolia* is most closely related to other sect. *Simiola* species of northwestern California — *E. nudata* (Curran ex Greene) Nesom (Colusa, Glenn, Lake, Mendocino, Napa, and Sonoma counties) and *E. percaulis* Nesom (Plumas County) (Fig. 1). The phylogenetic predictivity of geographic propinquity is powerful in many genera, monkeyflowers included, and all three species here are annual in duration, completely glabrous to glabrate, and have slightly succulent stems and leaves and chasmogamous flowers. *Erythranthe nudata* and *E. percaulis* are restricted to serpentine substrates, but my surmise (Nesom 2013) that *E. filicifolia* is a serpentine plant was wrong — Sexton et al. note instead that it characteristically inhabitats slow-draining, ephemeral seeps on exfoliating granite slabs or, occasionally, over basalt.

Further, all three species have greatly reduced leaves. Those of *Erythranthe nudata* and *E. percaulis* are small to the extent that plants of both appear mostly bare, mostly just stems. Most of the requisite photosynthesis apparently occurs through the green stems and perhaps in early season through soon-withering basal and lower cauline leaves. The outline size of *E. filicifolia* leaves is large, but the highly dissected blade produces relatively little photosynthetic surface. The bipinnate leaves of *E. filicifolia* perhaps are closer to an ancestral form, their morphology produced through extreme reduction of relatively large, lobed leaves. Alternatively, they could have been elaborated from simple, much smaller leaves. Presumably both extremes of morphology (tiny/non-lobed vs. highly dissected) contribute toward prevention of water loss through transpiration and can be understood as adaptively derived, but from the phylogenetic hypothesis here, it follows that the tendency toward reduction might have an common, underlying genetic basis, even if only through relaxation of morphological constraints.

In my revision of *Erythranthe* sect. *Simiola* (Nesom 2012), *E. nudata* was included in the Microphylla Group, Subgroup A (also including *E. microphylla*, *E. glaucescens*, and *E. marmorata*), characterized as annuals with chasmogamous and allogamous flowers large or variable in size and basal and proximal cauline leaves often purplish on one or both surfaces. The newly described *E. percaulis* and *E. filicifolia* also belong in Subgroup A.

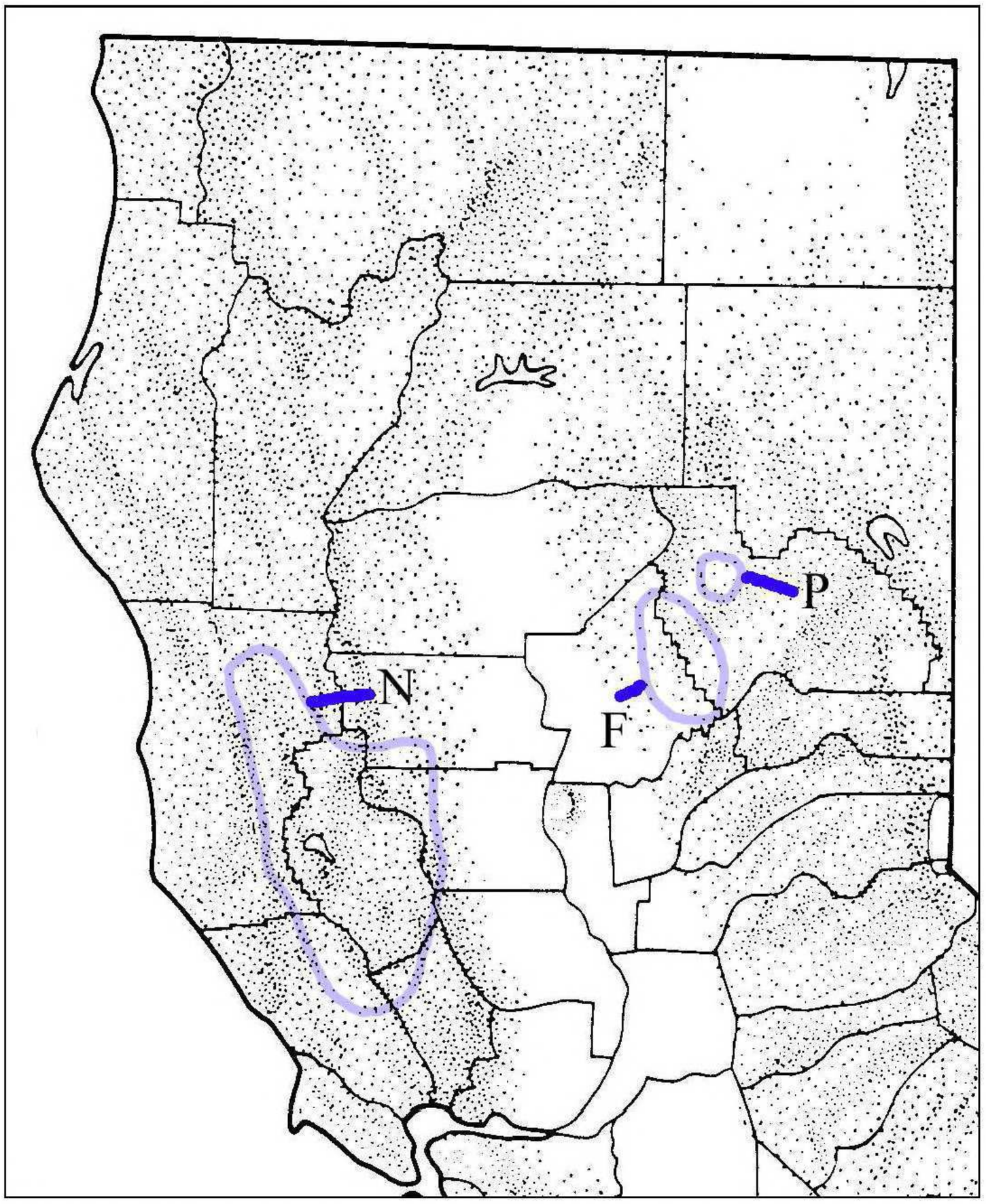

Figure 1. Distribution of *Erythranthe nudata* (N), *E. filicifolia* (F), and *E. percaulis* (P).

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